HISTORY INFORMATION FOR THE FOLLOWING MANUAL:

SERVICE MANUAL

AZ1-FK CHASSIS

MODEL NAME	REMOTE COMMANDER	DESTINATION
KDL-22BX300	RM-YD035	US
KDL-22BX300	RM-YD035	CND
KDL-22BX300	RM-YD035	MX
KDL-22BX300	RM-YD035	LATIN AMERICA
KDL-32BX300	RM-YD035	US
KDL-32BX300	RM-YD035	CND
KDL-32BX300	RM-YD035	MX

ORIGINAL MANUAL ISSUE DATE: 2/2010

REVISION DATE	SUBJECT
2/2010	No revisions or updates are applicable at this time.

LCD DIGITAL COLOR TV

SONY®

9-883-846-51

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APPENDIX A: ENCRYPTION KEY COMPONENTS ... A-1

SAFETY-RELATED COMPONENT WARNING

There are critical components used in LCD color TVs that are important for safety. These components are identified with shading and ⚠ mark on the schematic diagrams and the electrical parts list. It is essential that these critical parts be replaced only with the part number specified in the electrical parts list to prevent electric shock, fire, or other hazard.

NOTE: Do not modify the original design without obtaining written permission from the manufacturer or you will void the original parts and labor guarantee.

USE CAUTION WHEN HANDLING THE LCD PANEL

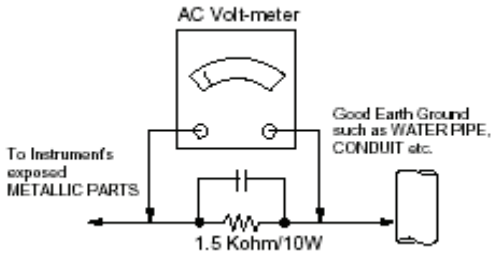
When repairing the LCD panel, be sure you are grounded by using a wrist band.

When installing the LCD panel on a wall, the LCD panel must be secured using the 4 mounting holes on the rear cover.

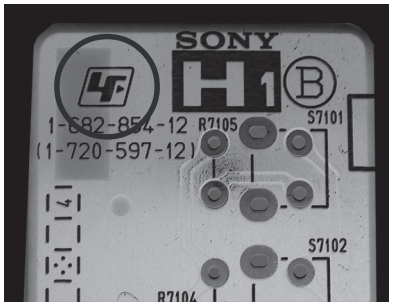
To avoid damaging the LCD panel:

- → do not press on the panel or frame edge to avoid the risk of electric shock.
- → do not scratch or press on the panel with any sharp objects.
- → do not leave the module in high temperatures or in areas of high humidity for an extended period of time.
- → do not expose the LCD panel to direct sunlight.
- → avoid contact with water. It may cause a short circuit within the module.
- → disconnect the AC adapter when replacing the backlight (CCFL) or inverter circuit. (High voltage occurs at the inverter circuit at 650Vrms.)
- → always clean the LCD panel with a soft cloth material.
- → use care when handling the wires or connectors of the inverter circuit. Damaging the wires may cause a short.
- → protect the panel from ESD to avoid damaging the electronic circuit (C-MOS).

LEAKAGE CURRENT HOT CHECK CIRCUIT



The circuit boards used in these models have been processed using Lead Free Solder. The boards are identified by the LF logo located close to the board designation e.g. H1 etc [see example]. The servicing of these boards requires special precautions to be taken as outlined below.



example

It is strongly recommended to use Lead Free Solder material in order to guarantee optimal quality of new solder joints.
Lead Free Solder is available under the following part numbers :

Part number	Diameter	Remarks
7-640-005-19	0.3mm	0.25Kg
7-640-005-20	0.4mm	0.50Kg
7-640-005-21	0.5mm	0.50Kg
7-640-005-22	0.6mm	0.25Kg
7-640-005-23	0.8mm	1.00Kg
7-640-005-24	1.0mm	1.00Kg
7-640-005-25	1.2mm	1.00Kg
7-640-005-26	1.6mm	1.00Kg

Due to the higher melting point of Lead Free Solder the soldering iron tip temperature needs to be set to 370 degrees centigrade. This requires soldering equipment capable of accurate temperature control coupled with a good heat recovery characteristics.

For more information on the use of Lead Free Solder, please refer to *http://www.sony-training.com*

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly soldered connections. Check the entire board surface for solder splashes and bridges.

2. Check the interboard wiring to ensure that no wires are "pinched" or touching high-wattage resistors.

3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.

4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.

5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.

6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.

7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

Leakage Test

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instructions.

2. A battery-operated AC milliampmeter. The Data Precision 245 digital multimeter is suitable for this job.

3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low voltage scale. The Simpson's 250 and Sanwa SH-63TRD are examples of passive VOMs that are suitable. Nearly all battery-operated digital multimeters that have a 2 VAC range are suitable (see Figure A).

How to Find a Good Earth Ground

A cold-water pipe is a guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms.

If a cold-water pipe is not accessible, connect a 60- to 100-watt trouble- light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side on the line; the lamp should light at normal brilliance if the screw is at ground potential (see Figure B).

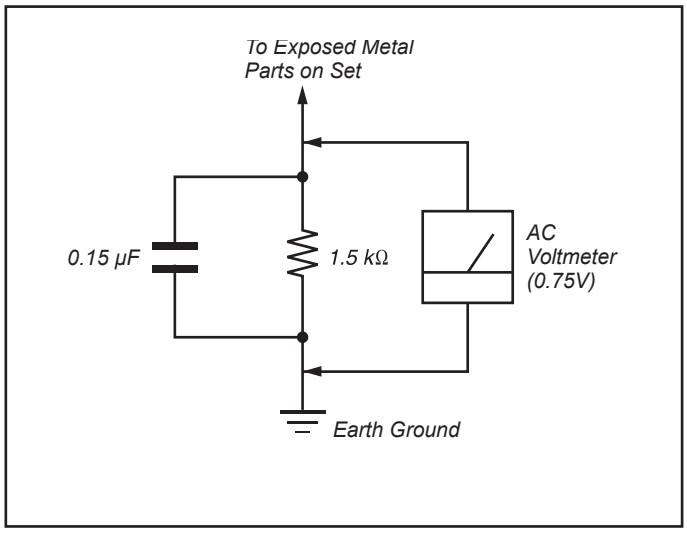


Figure A. Using an AC voltmeter to check AC leakage.

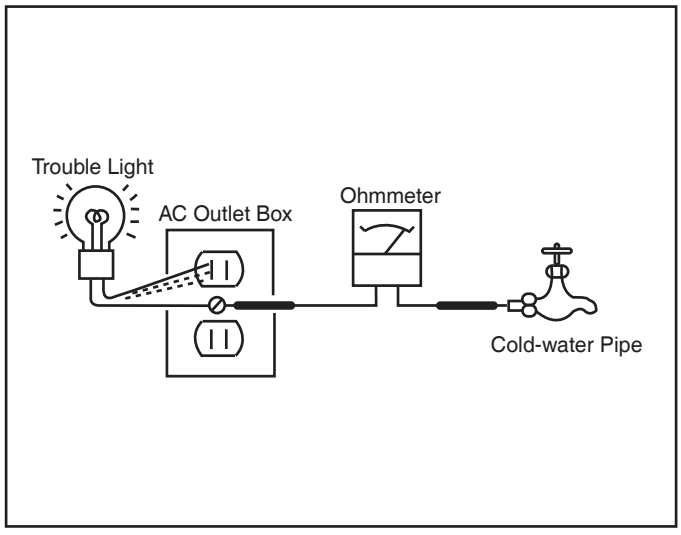
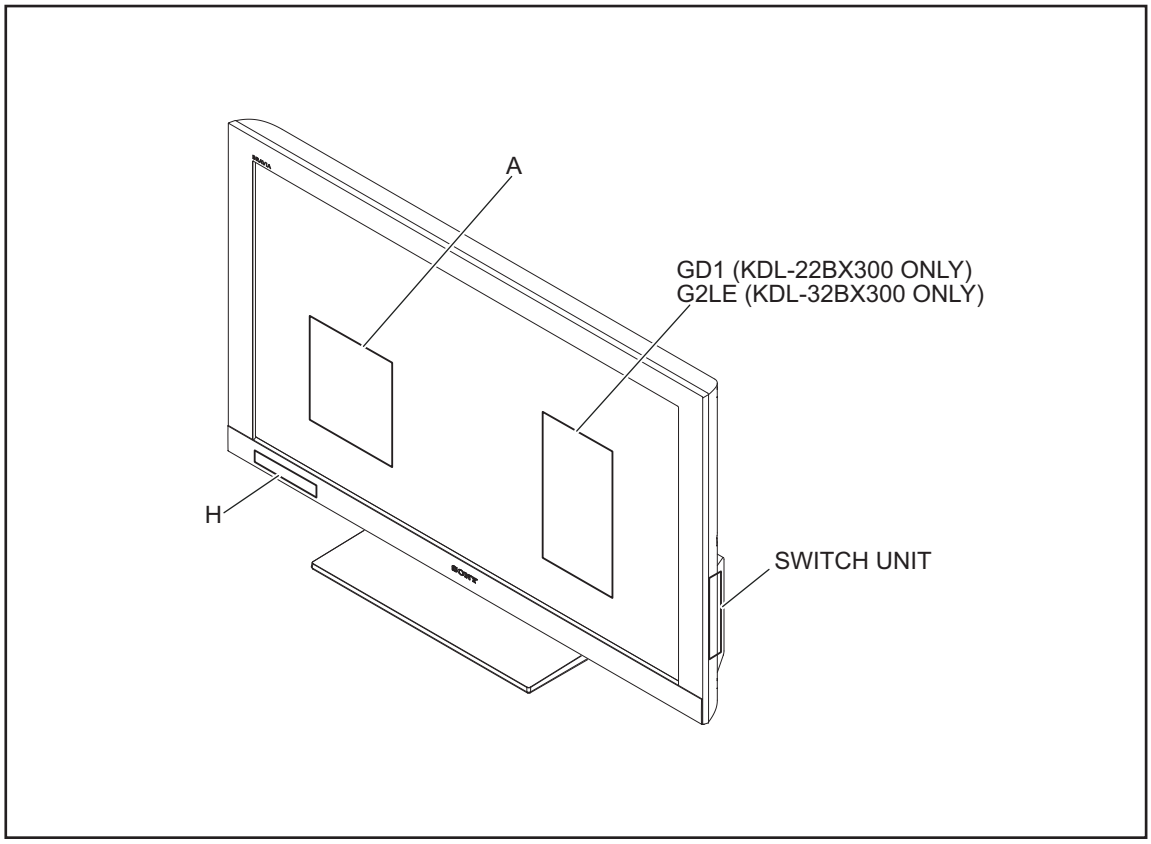


Figure B. Checking for earth ground.

SECTION 1: DIAGRAMS

1-1. CIRCUIT BOARDS LOCATION



1-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS INFORMATION

All capacitors are in µF unless otherwise noted. pF : µµF 50WV or less are not indicated except for electrolytics and tantalums.

All electrolytics are in 50V unless otherwise specified.

All resistors are in ohms. kΩ=1000Ω, MΩ=1000kΩ

Indication of resistance, which does not have one for rating electrical power, is as follows: **Pitch : 5mm**
Rating electrical power : $^1/_4$ W

$^1/_4$ W in resistance, $^1/_{10}$ W and $^1/_{16}$ W in chip resistance.

: nonflammable resistor

: fusible resistor

: internal component

: panel designation and adjustment for repair

: earth ground

: earth-chassis

All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

Readings are taken with a color-bar signal input.

Readings are taken with a 10MΩ digital multimeter.

Voltages are DC with respect to ground unless otherwise noted.

Voltage variations may be noted due to normal production tolerances.

All voltages are in V.

S : Measurement impossibility.

: B+line.

: B-line. (Actual measured value may be different).

: signal path. (RF)

Circled numbers are waveform references.

The components identified by shading and ⚠ symbol are critical for safety. Replace only with part number specified.

The symbol indicates a fast operating fuse and is displayed on the component side of the board. Replace only with fuse of the same rating as marked.

Les composants identifies per un trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

Le symbole indique une fusible a action rapide. Doit etre remplace par une fusible de meme yaleur, comme maque.

NOTE: The components identified by a red outline and a mark contain confidential information. Specific instructions must be adhered to whenever these components are repaired and/or replaced.
See Appendix A: Encryption Key Components in the back of this manual.

REFERENCE INFORMATION

RESISTOR

: RN	METAL FILM
: RC	SOLID
: FPRD	NONFLAMMABLE CARBON
: FUSE	NONFLAMMABLE FUSIBLE
: RW	NONFLAMMABLE WIREWOUND
: RS	NONFLAMMABLE METAL OXIDE
: RB	NONFLAMMABLE CEMENT
: ※	ADJUSTMENT RESISTOR

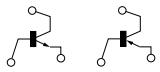
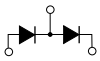
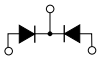
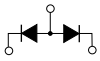
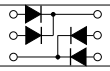
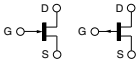
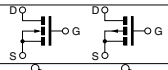
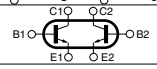
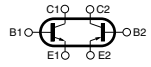
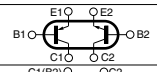
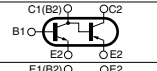
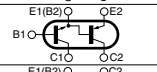
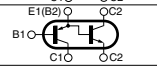
CAPACITOR

: TA	TANTALUM
: PS	STYROL
: PP	POLYPROPYLENE
: PT	MYLAR
: MPS	METALIZED POLYESTER
: MPP	METALIZED POLYPROPYLENE
: ALB	BIPOLAR
: ALT	HIGH TEMPERATURE
: ALR	HIGH RIPPLE

COIL

: LF-8L MICRO INDUCTOR

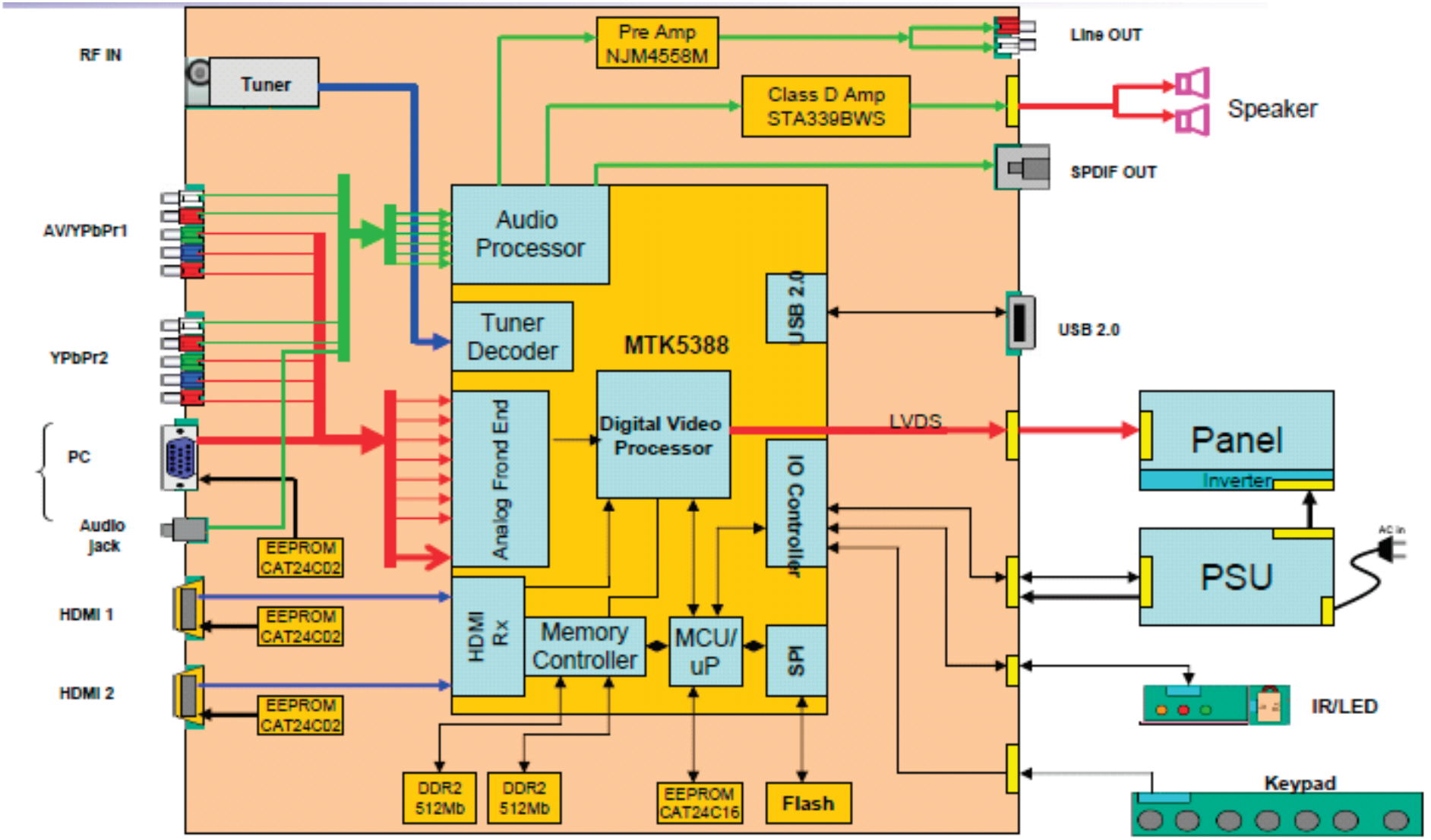
Terminal name of semiconductors in silk screen printed circuit (※)

	Device	Printed symbol	Terminal name	Circuit
1	Transistor		Collector Base Emitter	
2	Transistor		Collector Base Emitter	
3	Diode		Cathode Anode	
4	Diode		Cathode Anode (NC)	
5	Diode		Cathode Anode (NC)	
6	Diode		Common Anode Cathode	
7	Diode		Common Anode Cathode	
8	Diode		Common Anode Anode	
9	Diode		Common Anode Anode	
10	Diode		Common Cathode Cathode	
11	Diode		Common Cathode Cathode	
12	Diode		Anode Cathode Anode Anode Cathode Anode	
13	Transistor (FET)		Drain Source Gate	
14	Transistor (FET)		Drain Source Gate	
15	Transistor (FET)		□ Source □ Drain □ Gate	
16	Transistor		□ Emitter □ Collector □ Base	
17	Transistor		C2 B1 E1 E2 B2 C1	
18	Transistor		C1 B2 E2 E1 B1 C2	
19	Transistor		C1 B2 E2 E1 B1 C2	
20	Transistor		C1 B2 E2 E1 B1 C2	
21	Transistor		E2 B1 E1 C2 C1(B2)	
22	Transistor		(B2) B1 E1 E2 C1 C2	
23	Transistor		(B2) E2 E1 B1 C2 C1	
–	Discrete semiconductor			

(Chip semiconductors that are not actually used are included.)

Ver.1.6

1-3. BLOCK DIAGRAM



1-4. SCHEMATICS AND SUPPORTING INFORMATION

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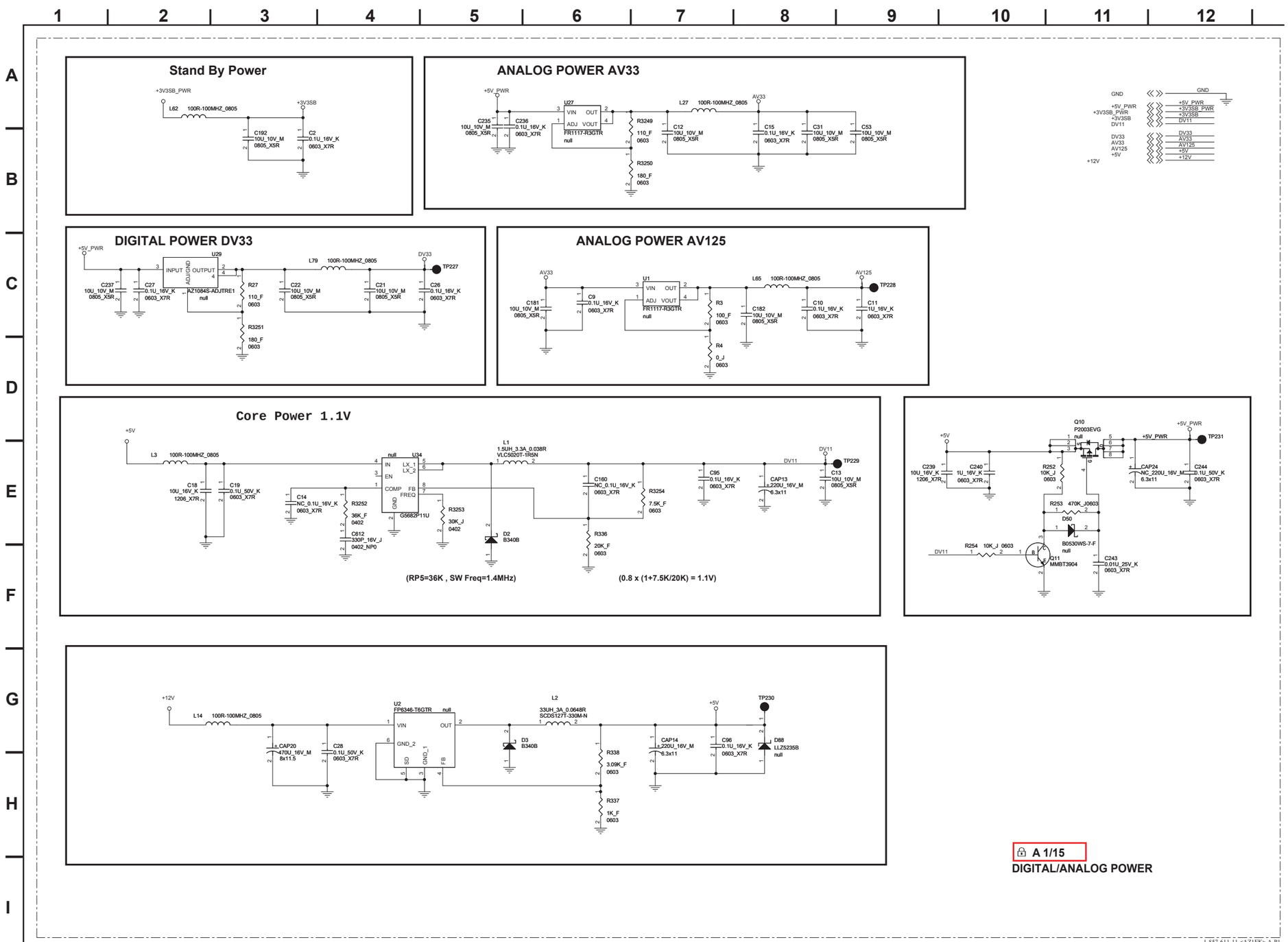

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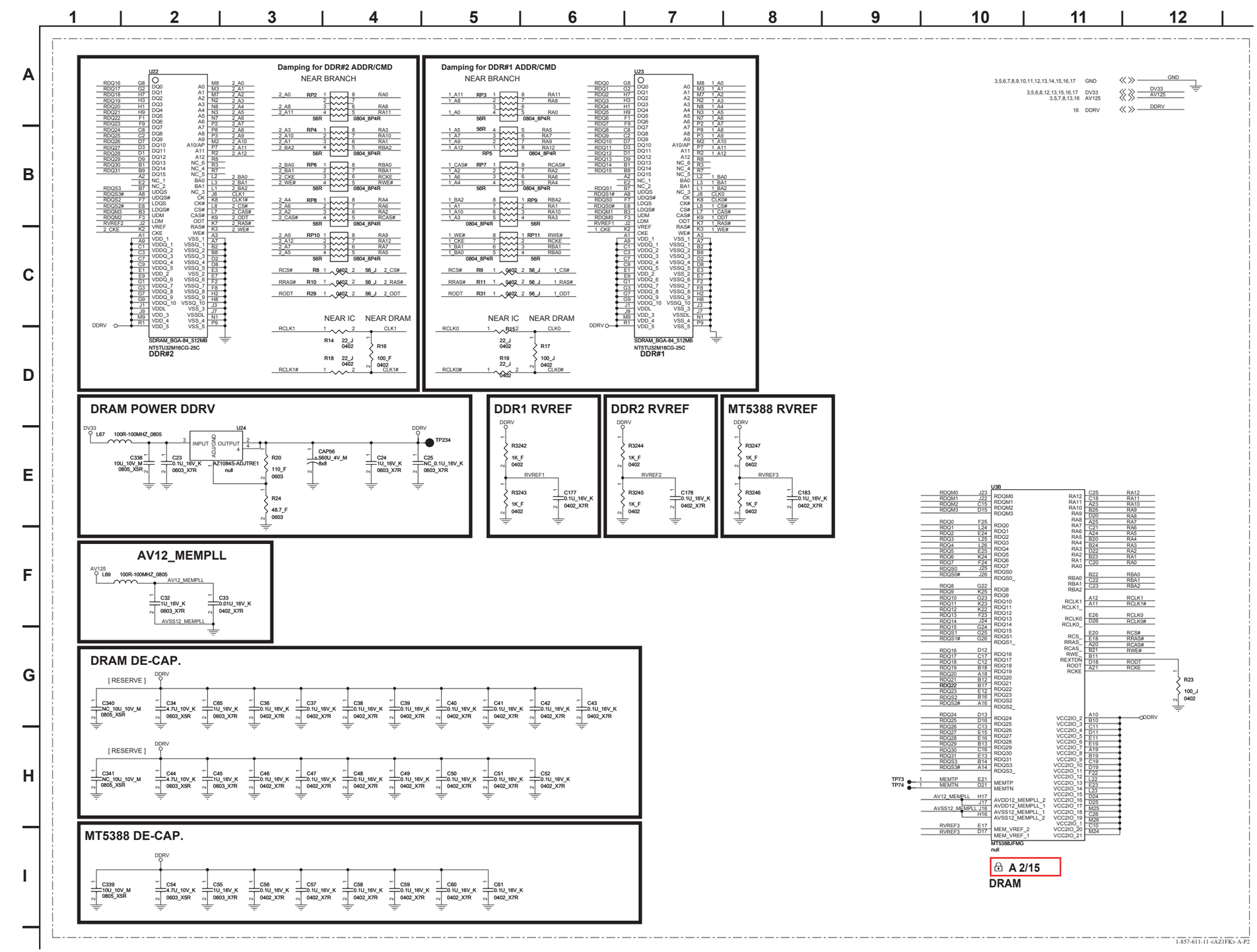

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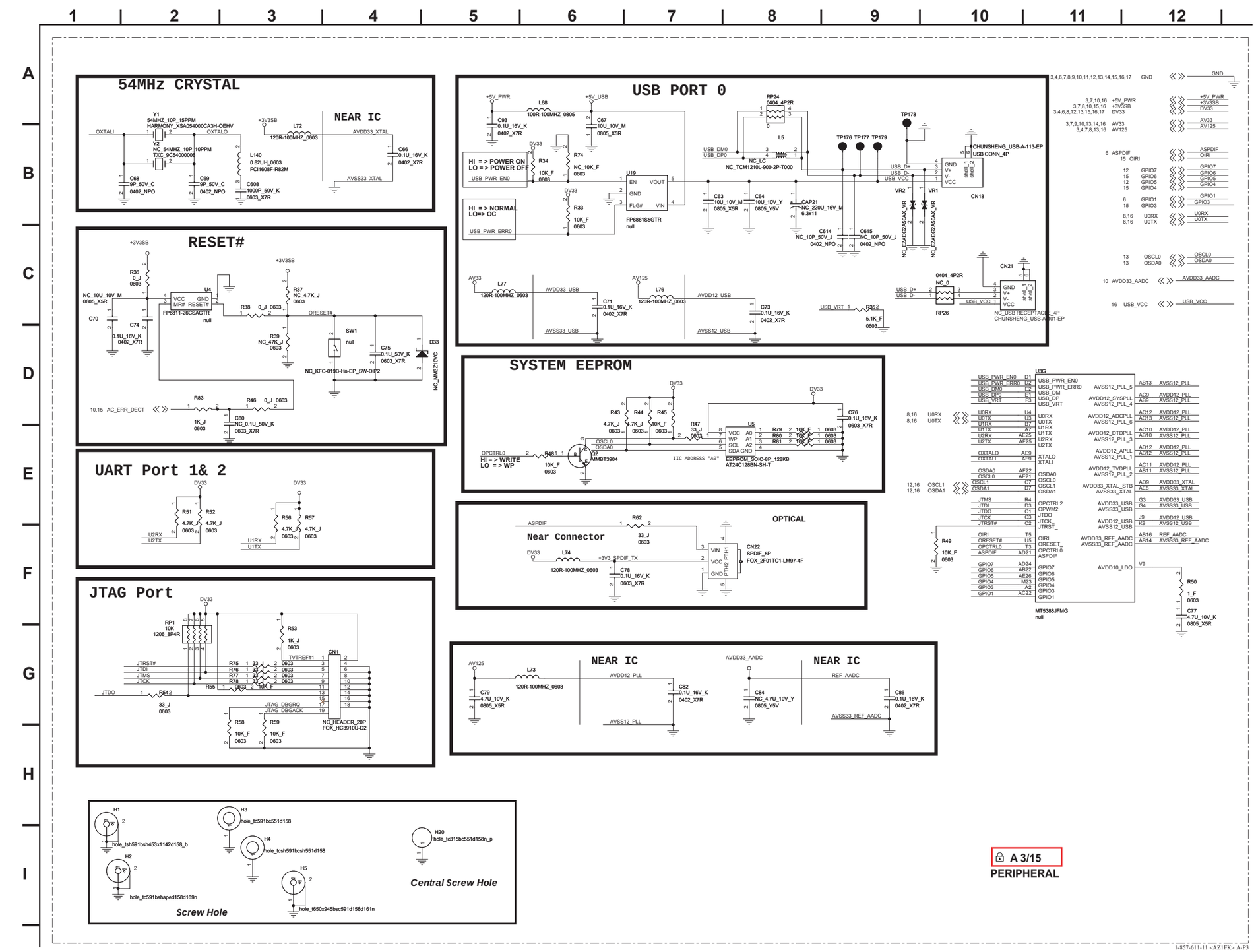
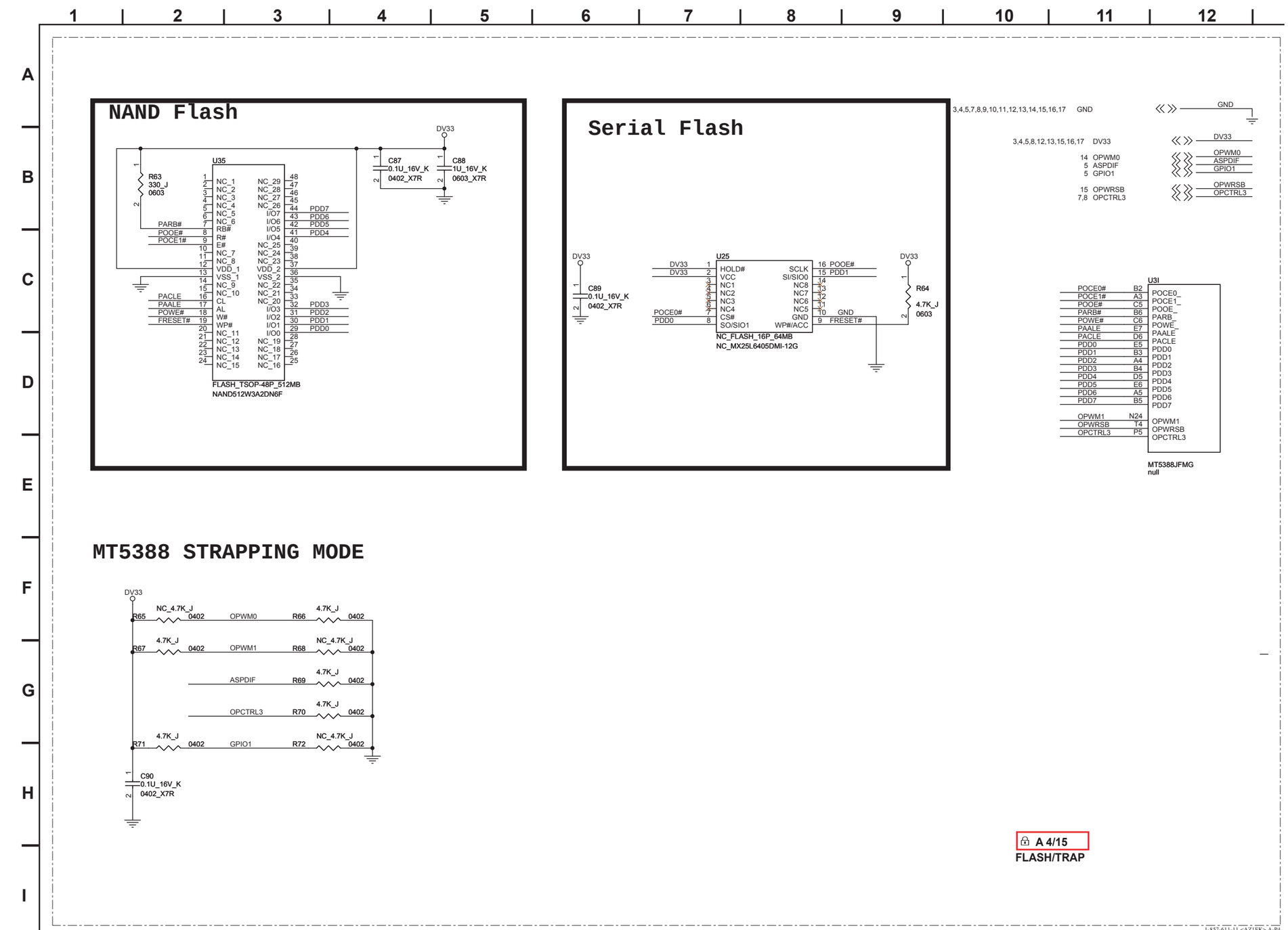


A BOARD SCHEMATIC DIAGRAM (4 OF 15)



MT5388 STRAPPING MODE

A 4/15
FLASH/TRAP

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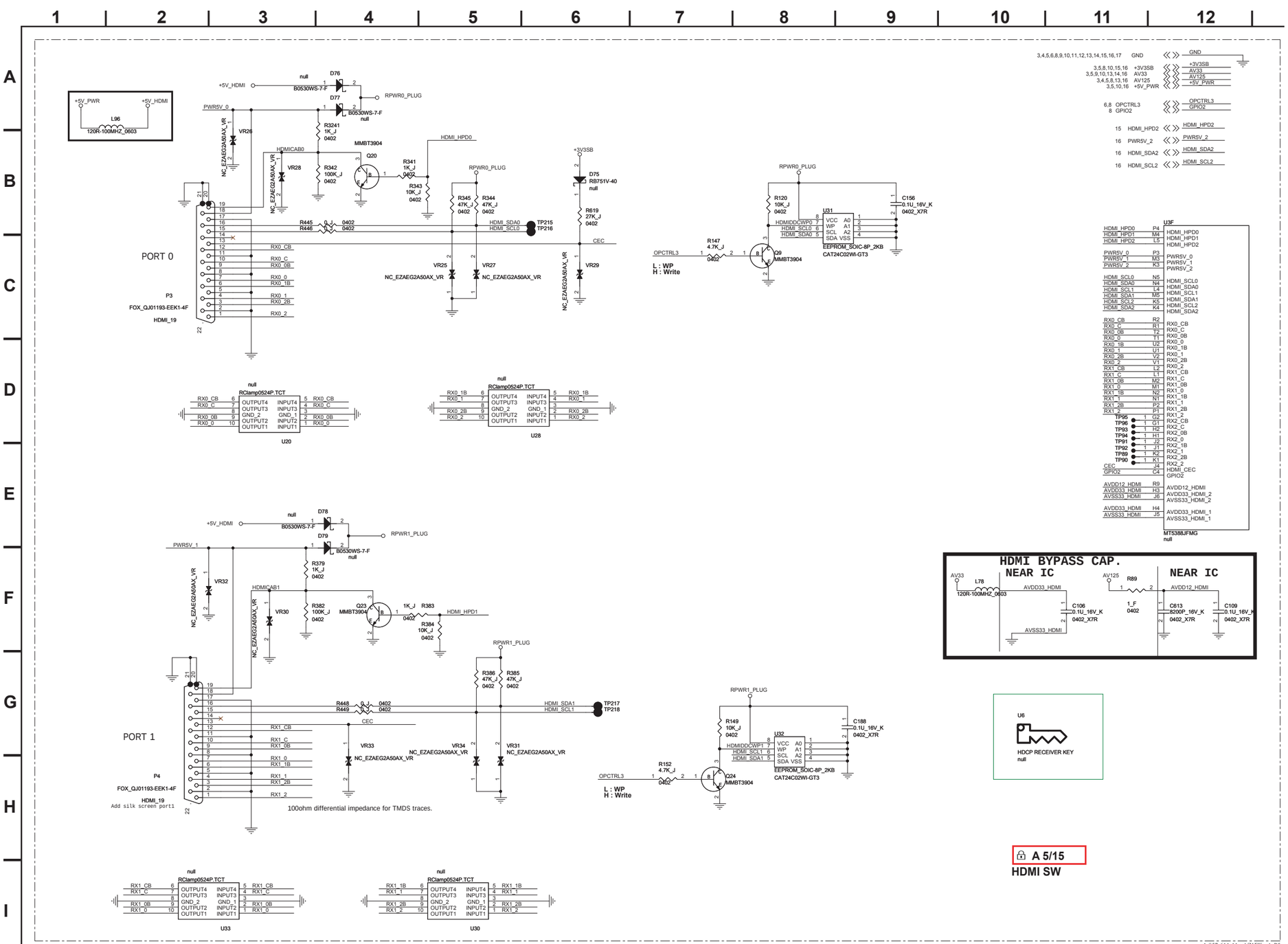
A BOARD SCHEMATIC DIAGRAM (5 OF 15)



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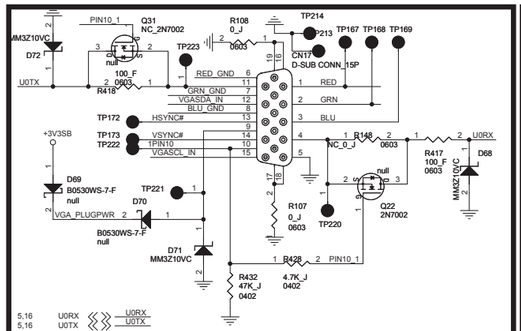
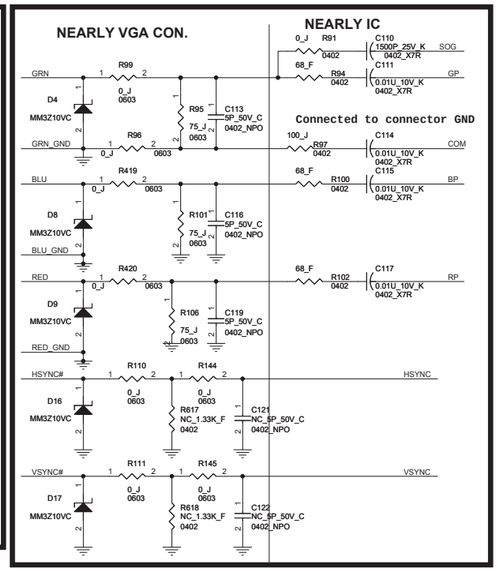
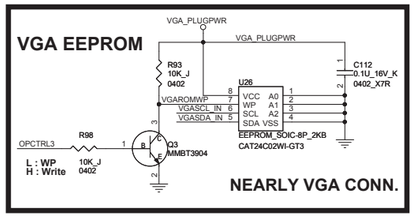
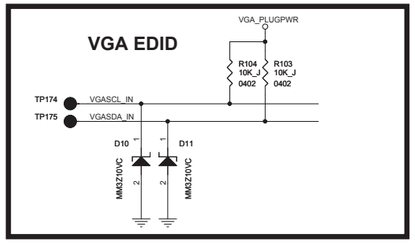
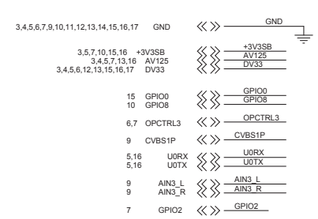
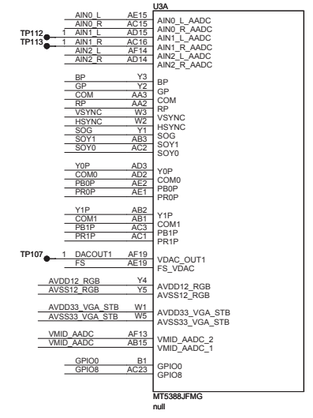


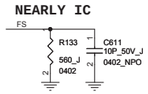


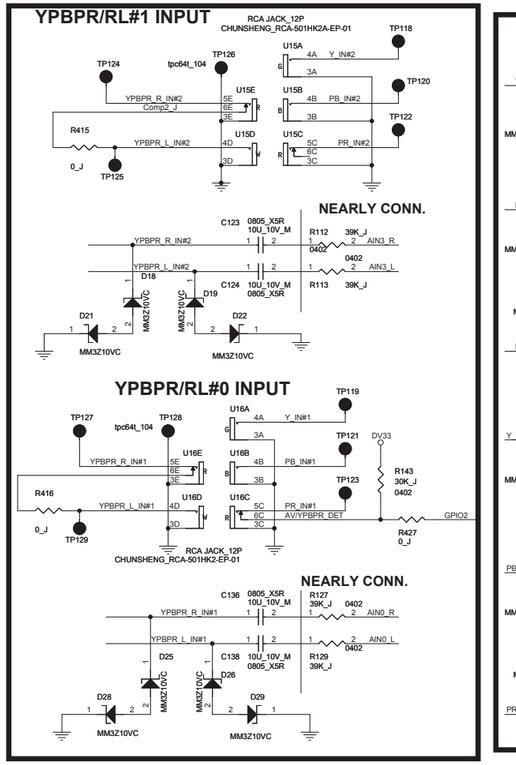


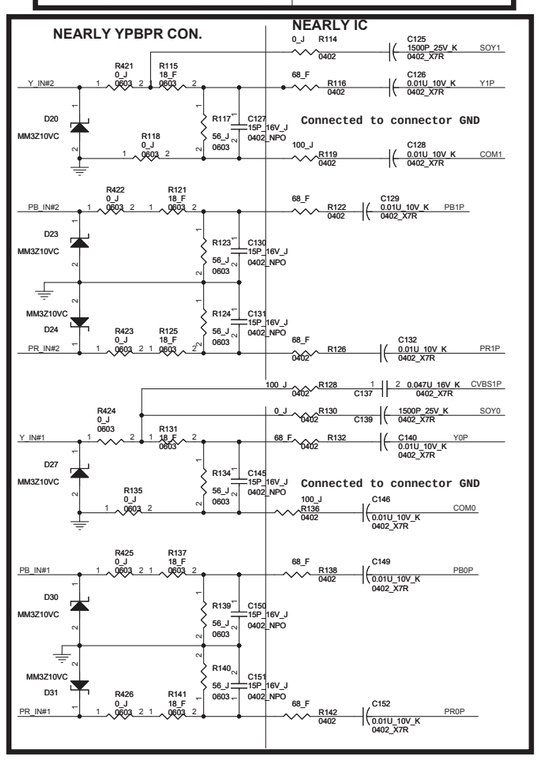


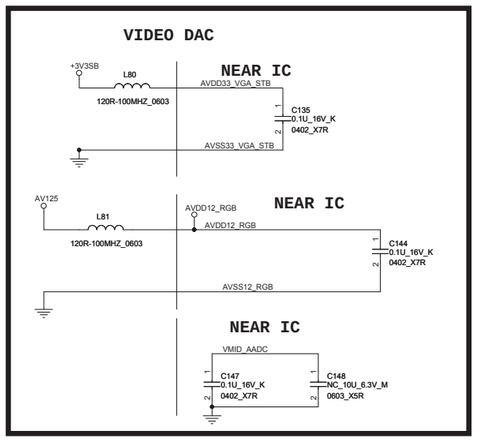








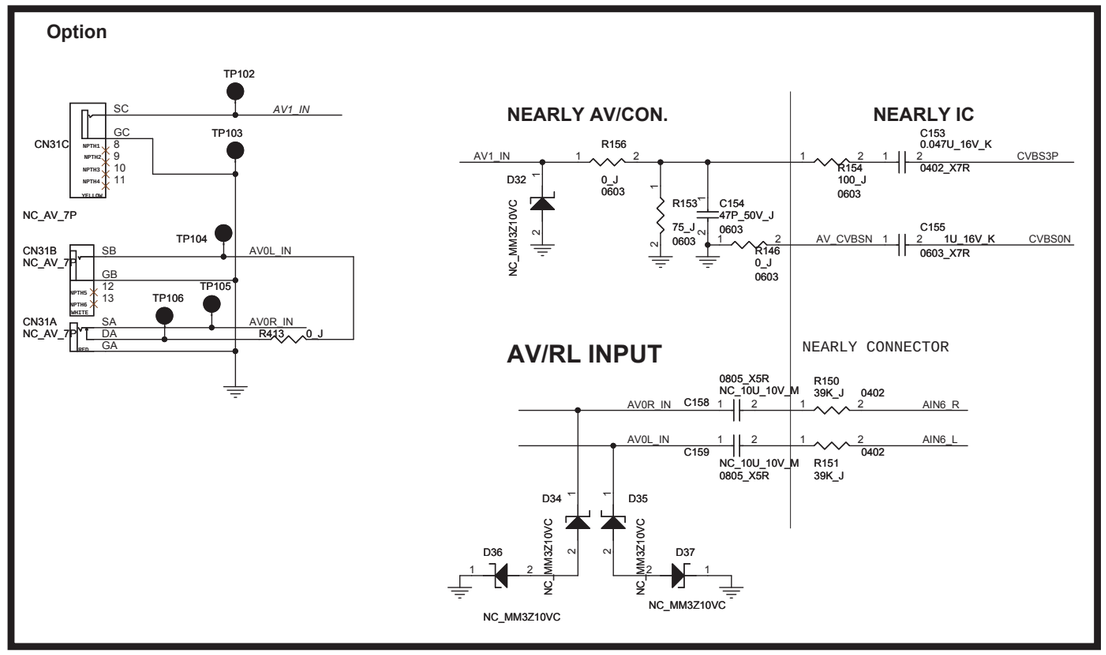


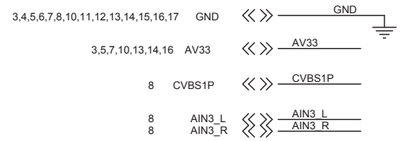


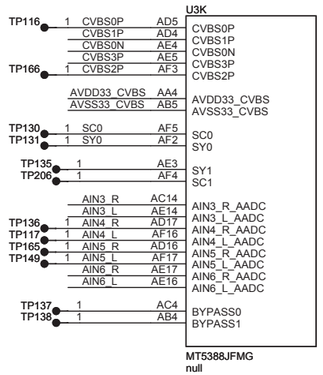
A 6/15

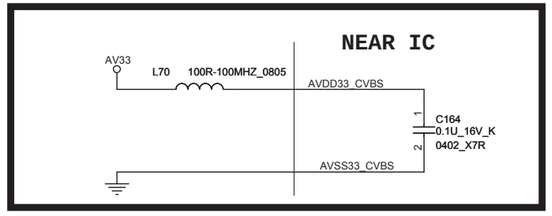
YPBPR&VGA

A BOARD SCHEMATIC DIAGRAM (7 OF 15)



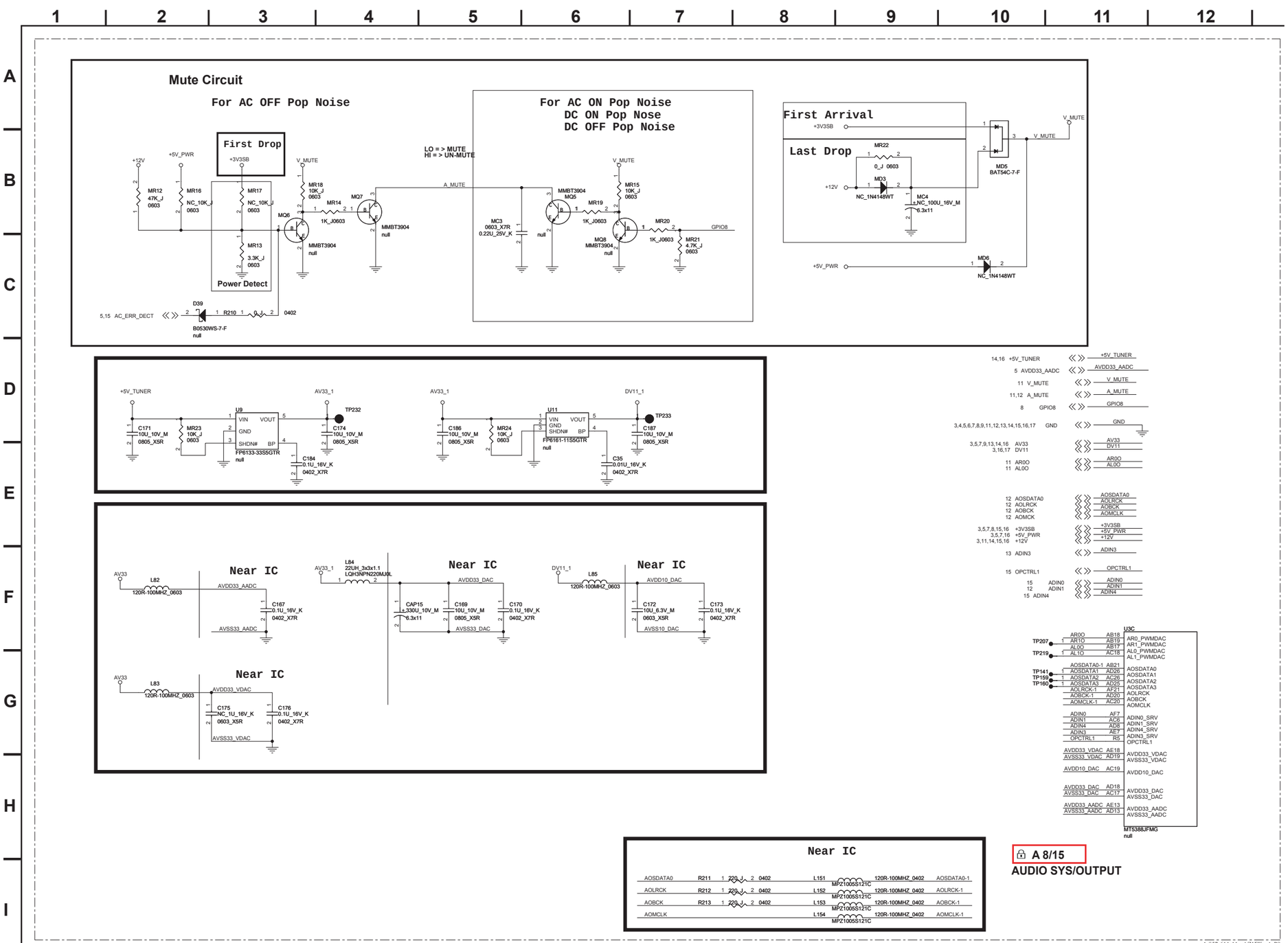




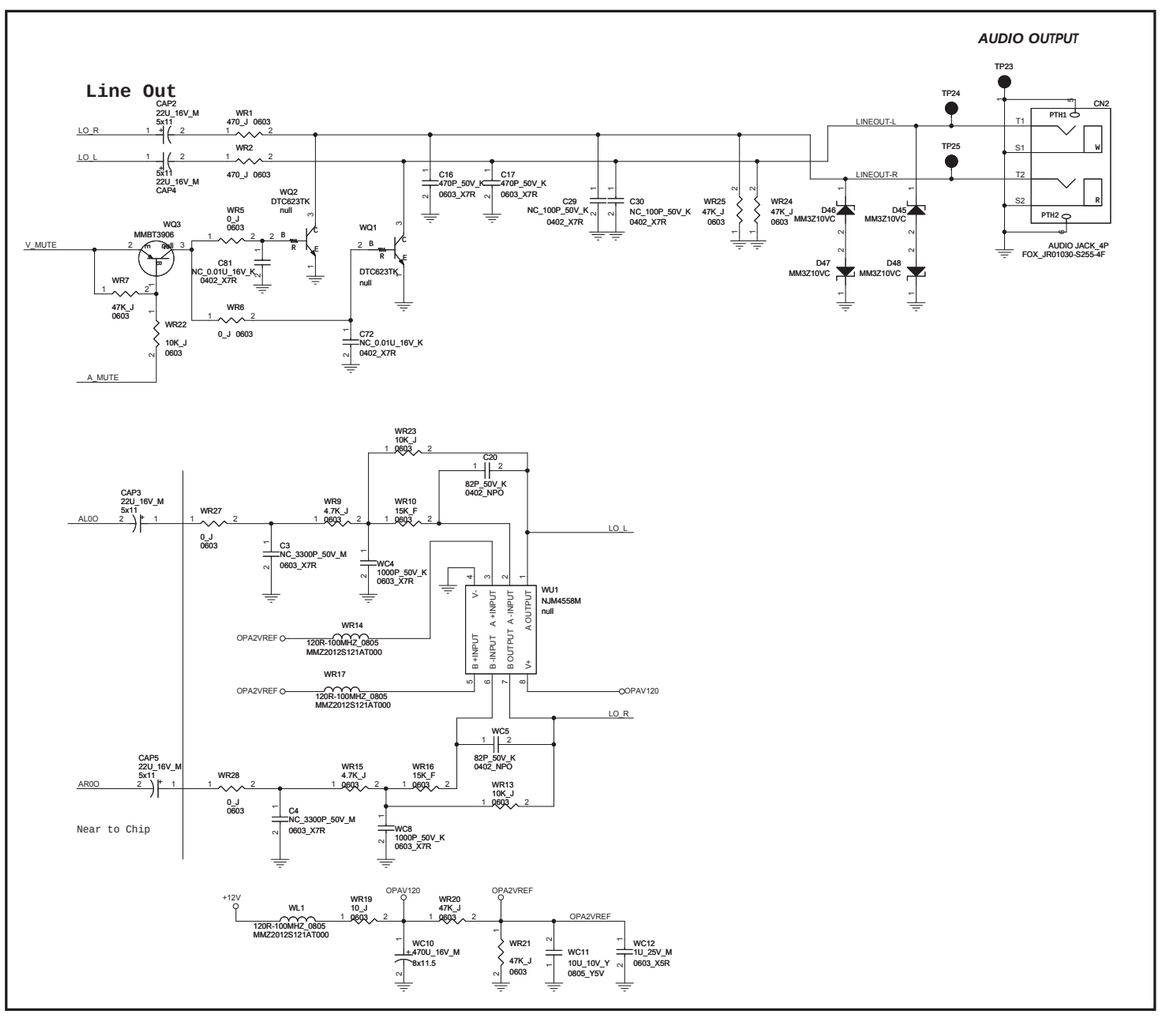


A 7/15
AV & SV

A BOARD SCHEMATIC DIAGRAM (8 OF 15)



A BOARD SCHEMATIC DIAGRAM (9 OF 15)

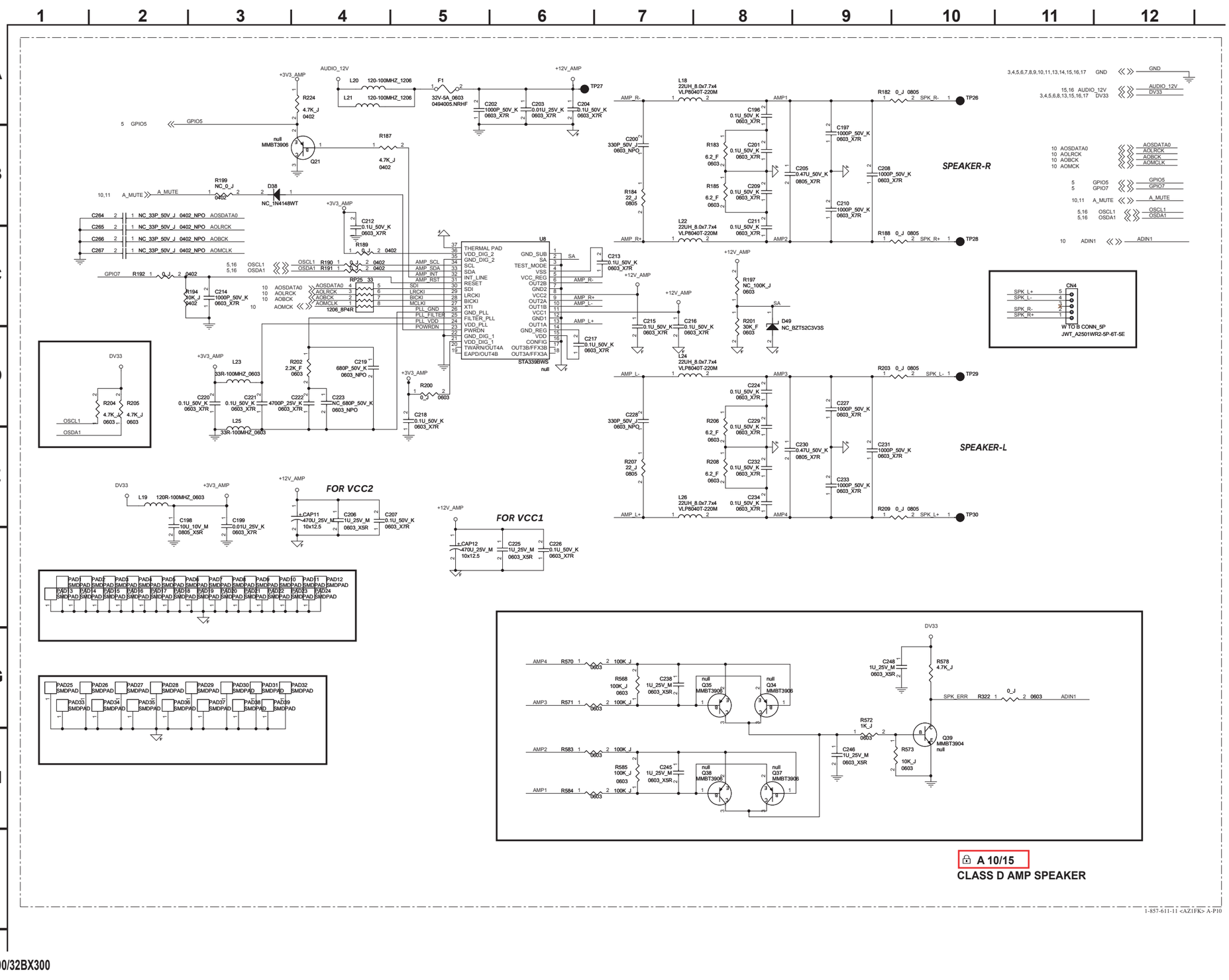


3,4,5,6,7,8,9,10,12,13,14,15,16,17	GND	GND
3,10,14,15,16	+12V	+12V
3,5,7,9,10,13,14,16	AV33	AV33
10	AR0O	AR0O
10	AL0O	AL0O
10,12	A_MUTE	A_MUTE
10	V_MUTE	V_MUTE

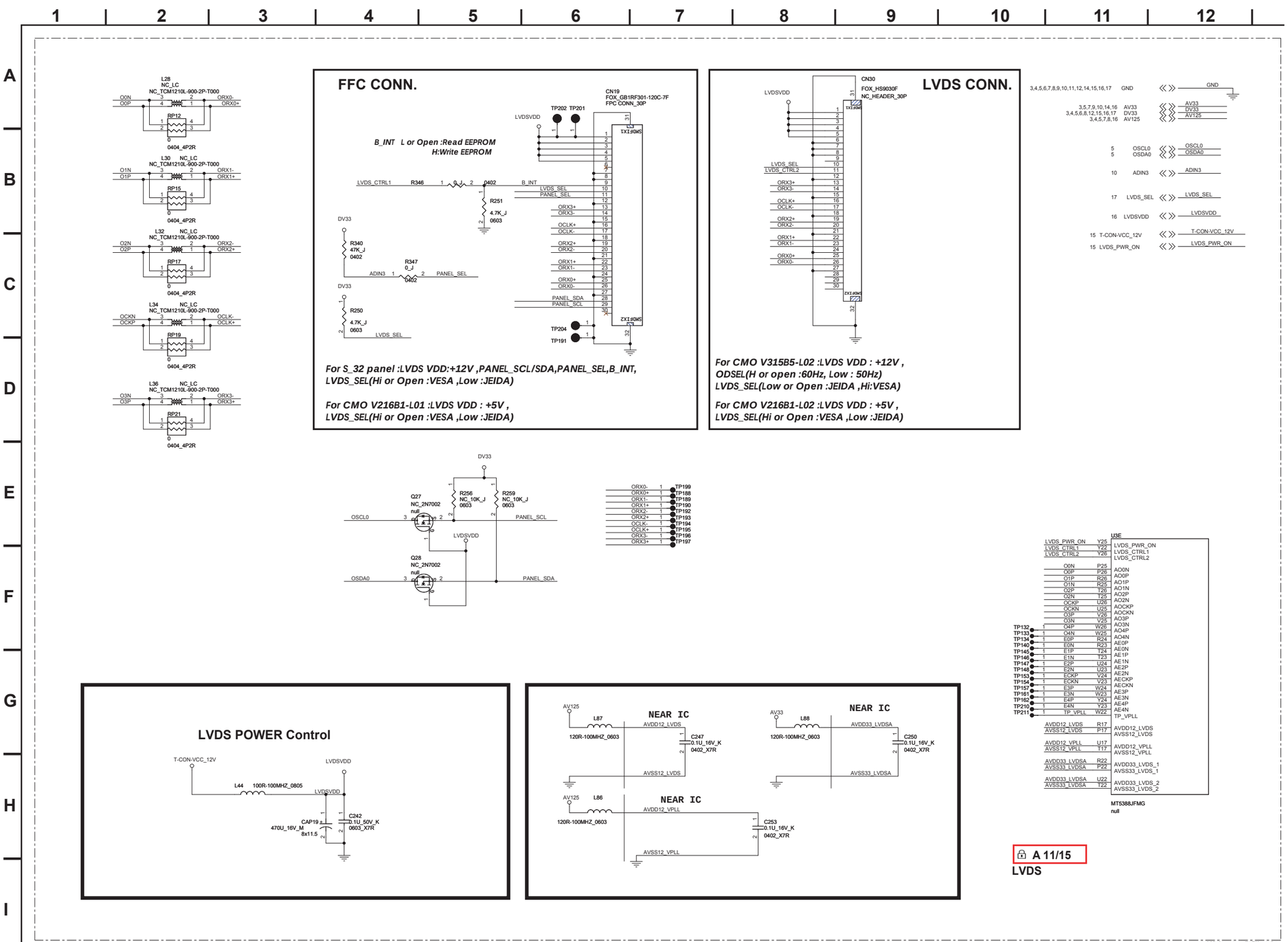
A 9/15
LINE OUT

1-857-611-11 <AZ1FK> A-P9

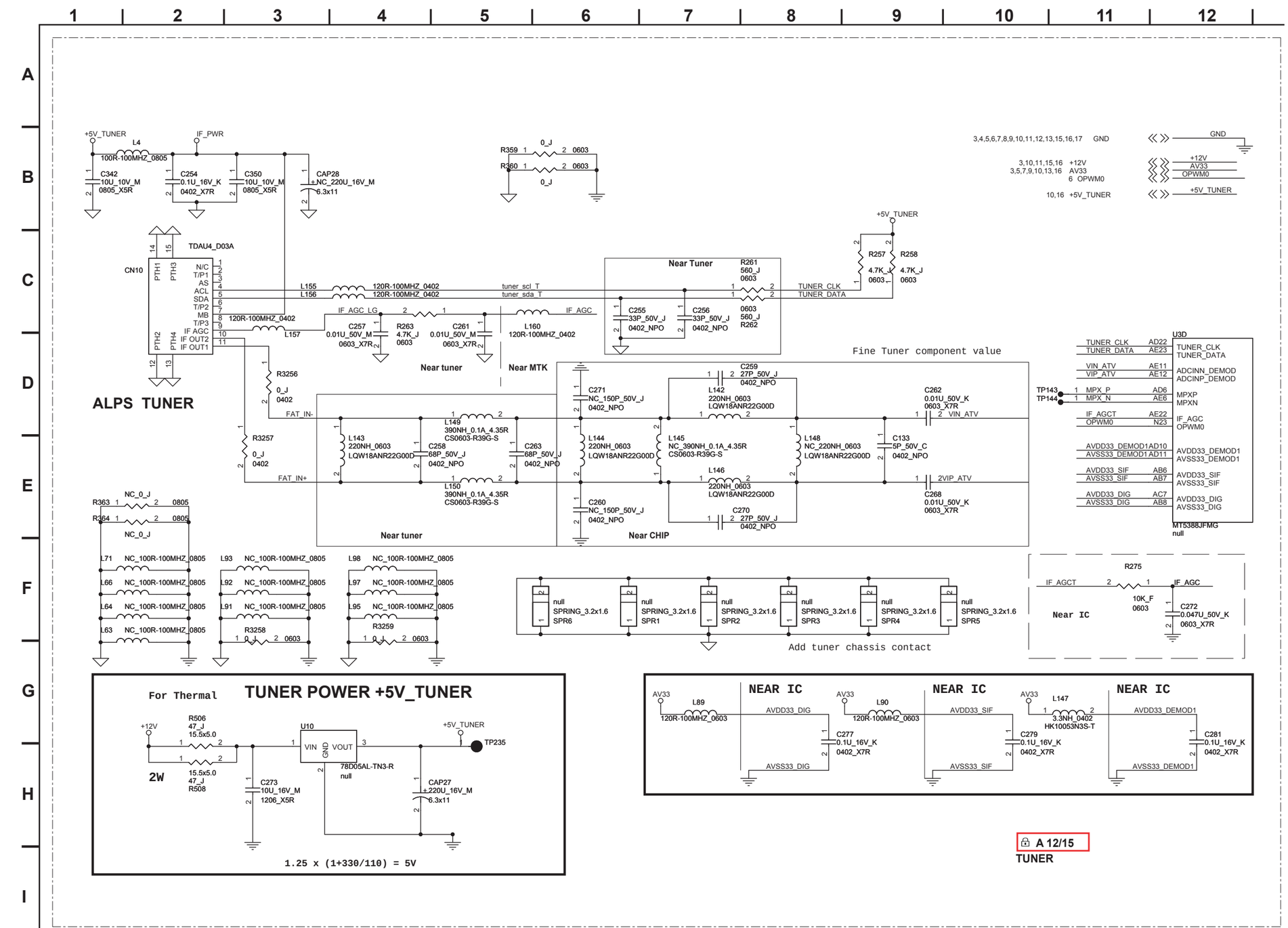
A BOARD SCHEMATIC DIAGRAM (10 OF 15)



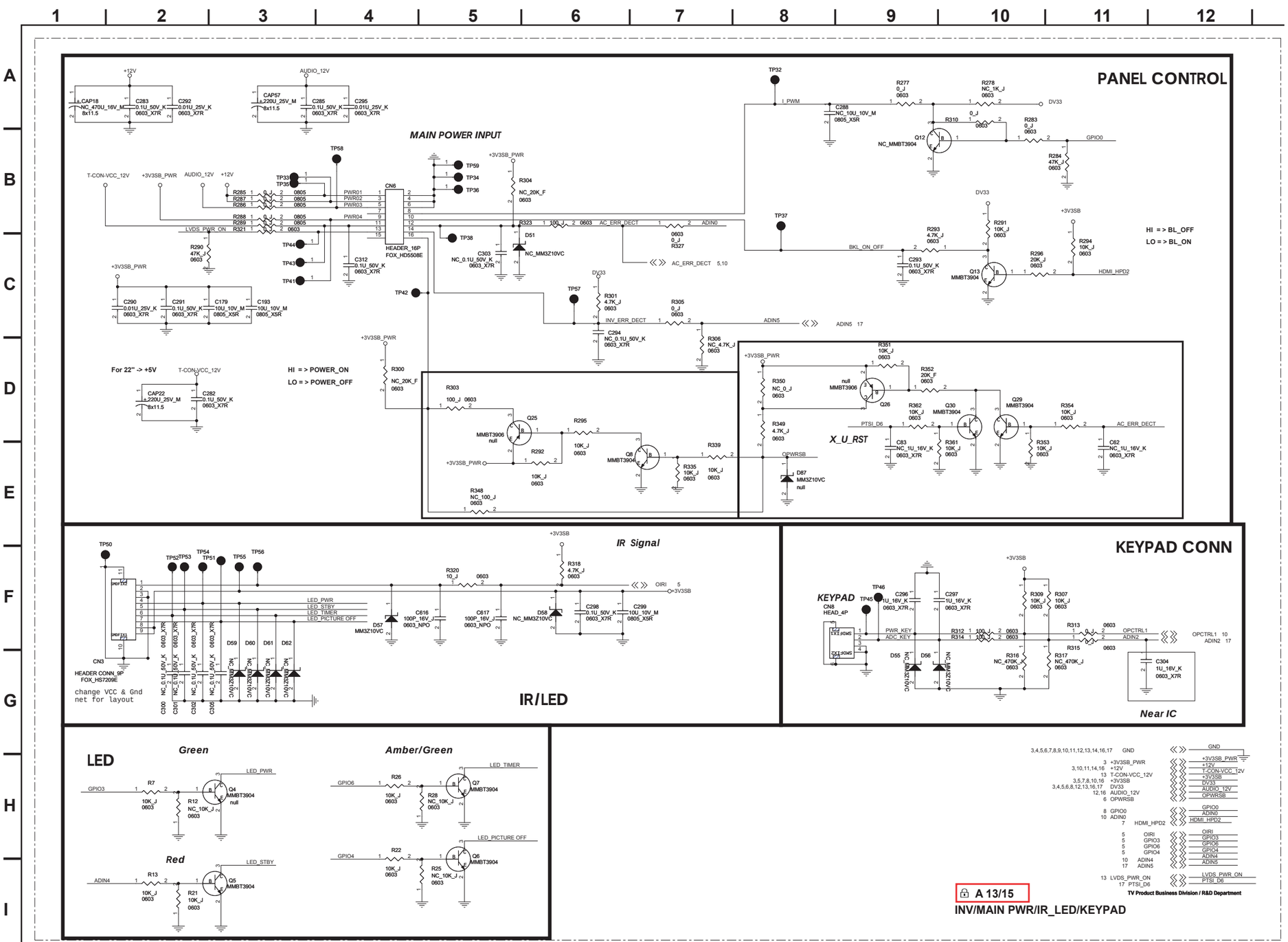
A BOARD SCHEMATIC DIAGRAM (11 OF 15)



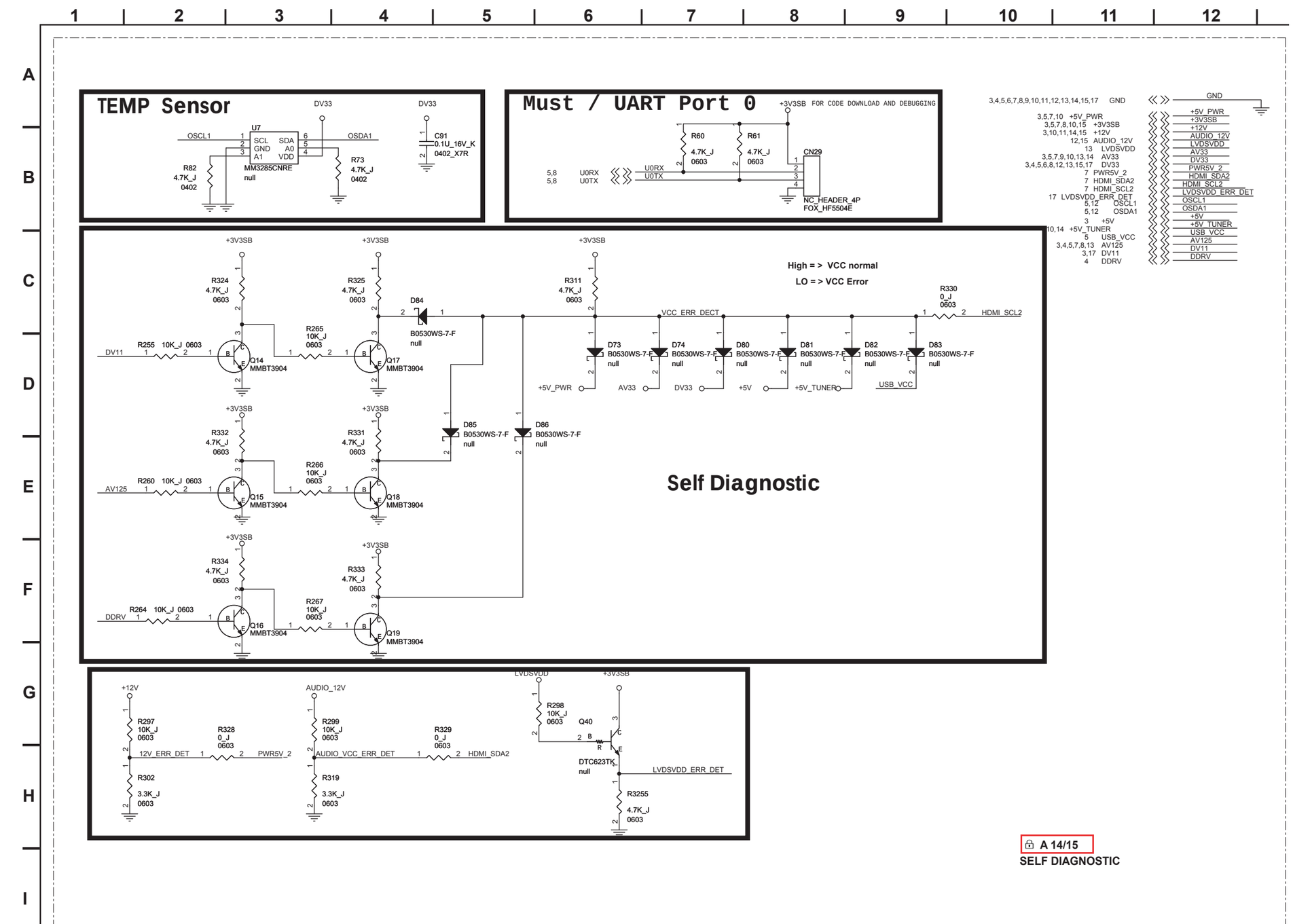
A BOARD SCHEMATIC DIAGRAM (12 OF 15)



A BOARD SCHEMATIC DIAGRAM (13 OF 15)



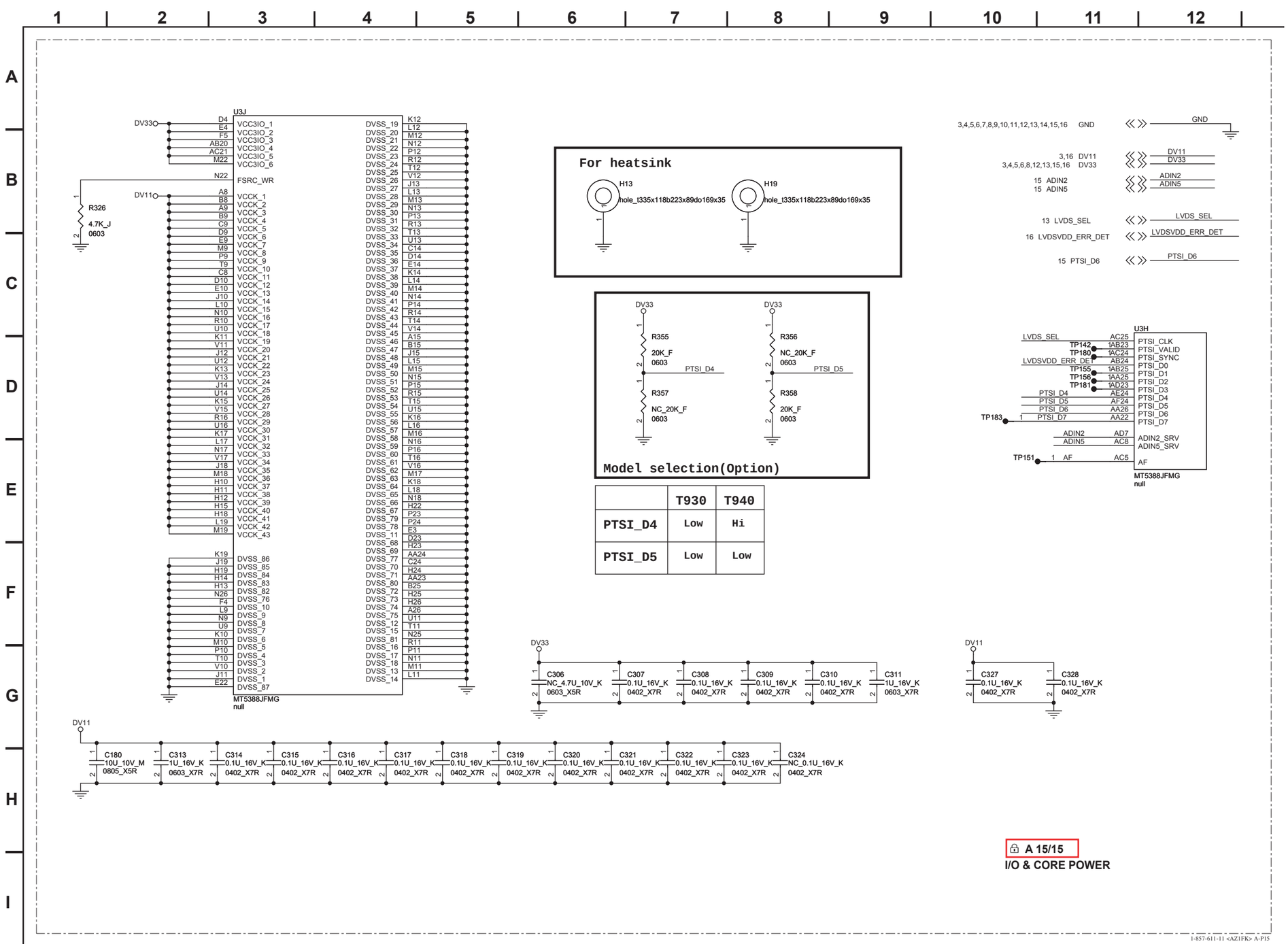
A BOARD SCHEMATIC DIAGRAM (14 OF 15)



A 14/15
SELF DIAGNOSTIC

1-857-611-11 <AZ1FK> A-P14

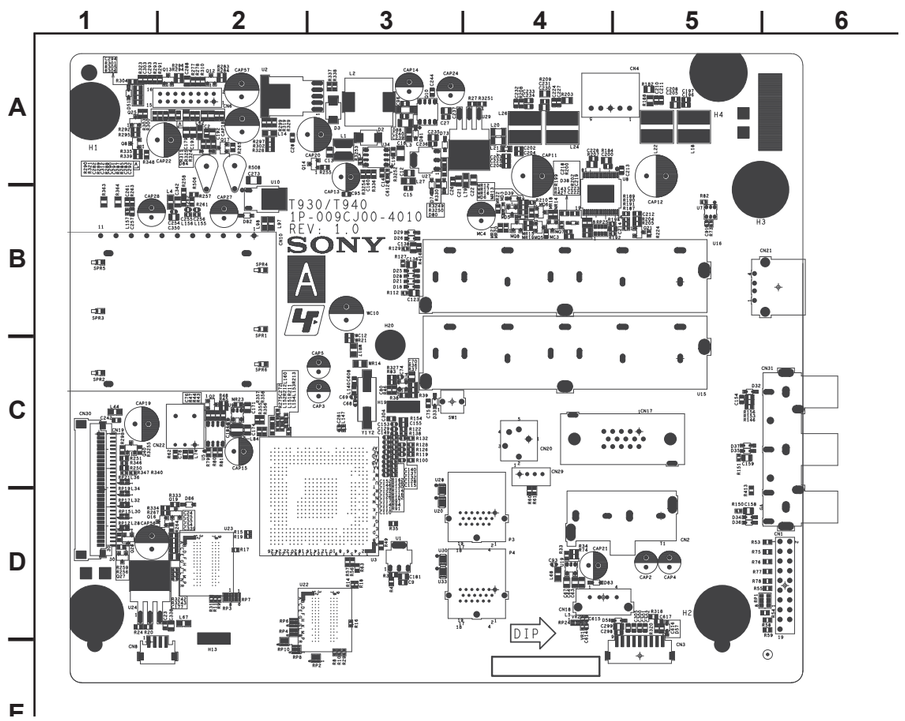
A BOARD SCHEMATIC DIAGRAM (15 OF 15)



A

[DIGITAL/ANALOG POWER/DRAM/PERIPHERAL/FLASH/TRAP/HDMI SW/YPBPR &VGA/AV & SV/AUDIO SYS/OUTPUT/LINE OUT/CLASS D AMP SPEAKER/LVDS/TUNER/INV/MAIN PWR/IR_LED/KEYPAD/SELF DIAGNOSTIC/I/O & CORE POWER]

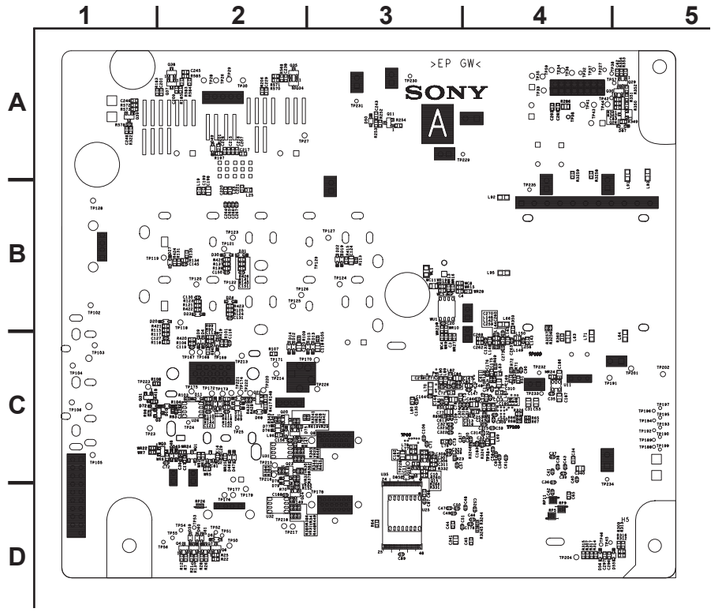
COMPONENT SIDE



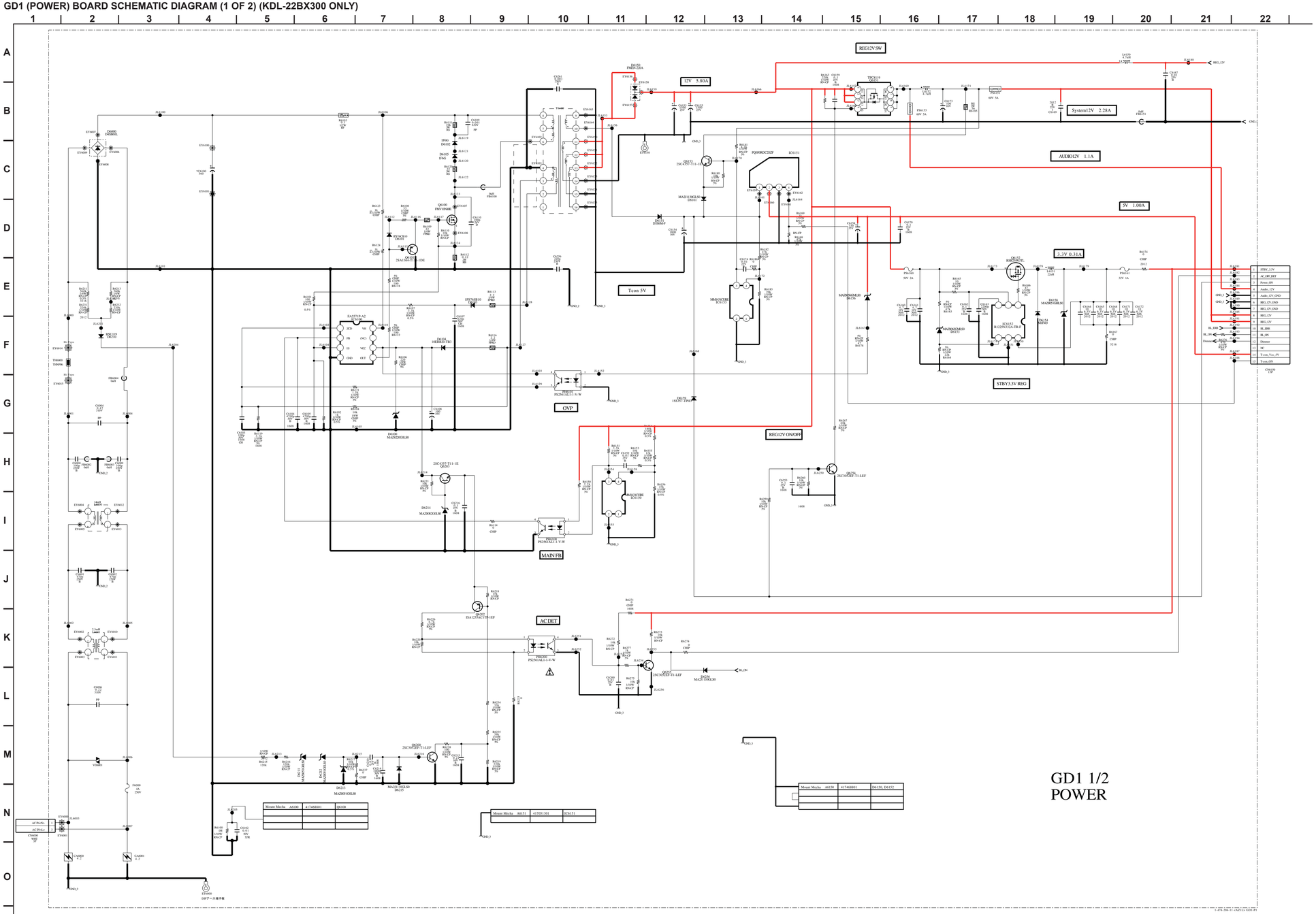
A

[DIGITAL/ANALOG POWER/DRAM/PERIPHERAL/FLASH/TRAP/HDMI SW/YPBPR &VGA/AV & SV/AUDIO SYS/OUTPUT/LINE OUT/CLASS D AMP SPEAKER/LVDS/TUNER/INV/MAIN PWR/IR_LED/KEYPAD/SELF DIAGNOSTIC/I/O & CORE POWER]

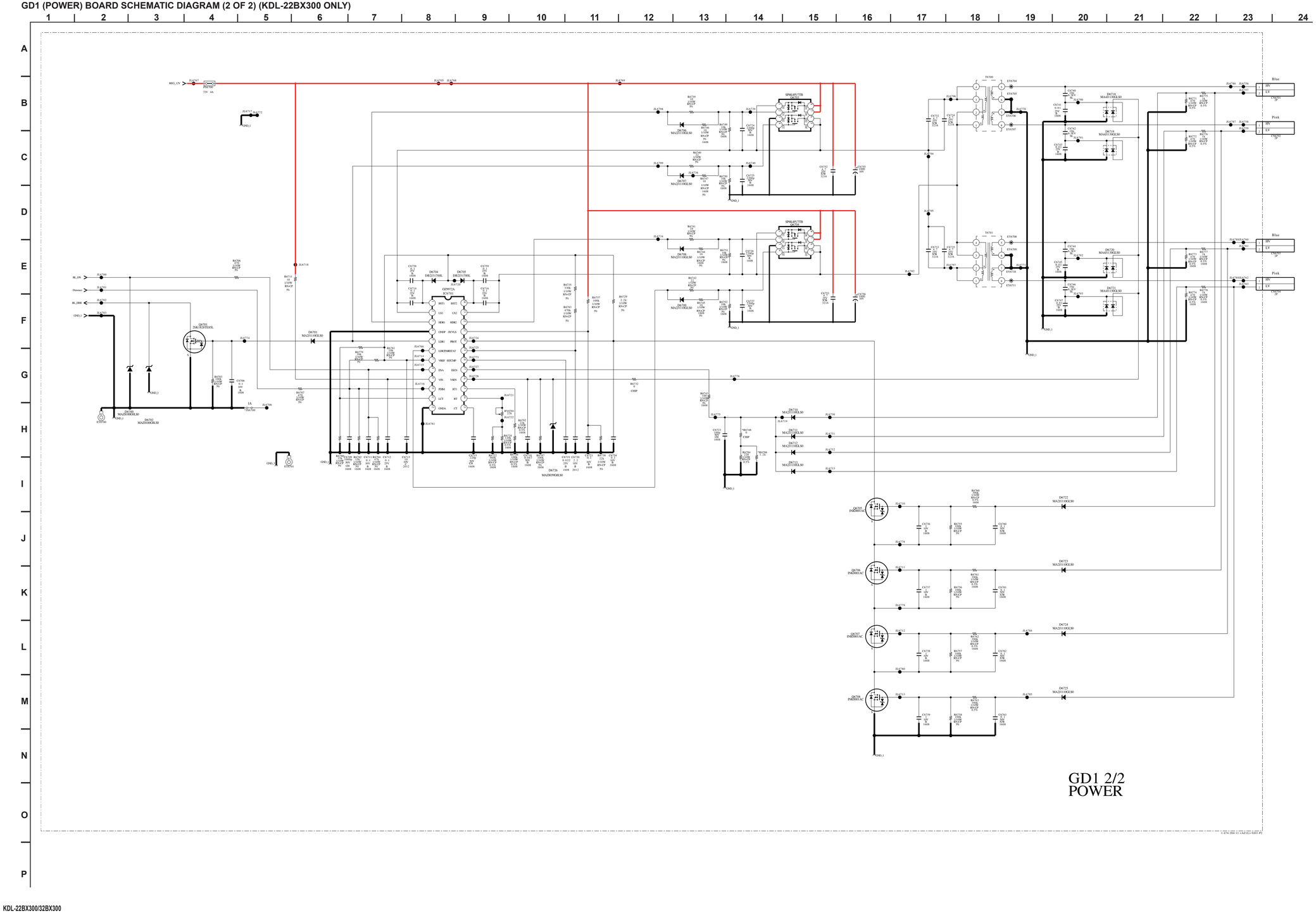
CONDUCTOR SIDE



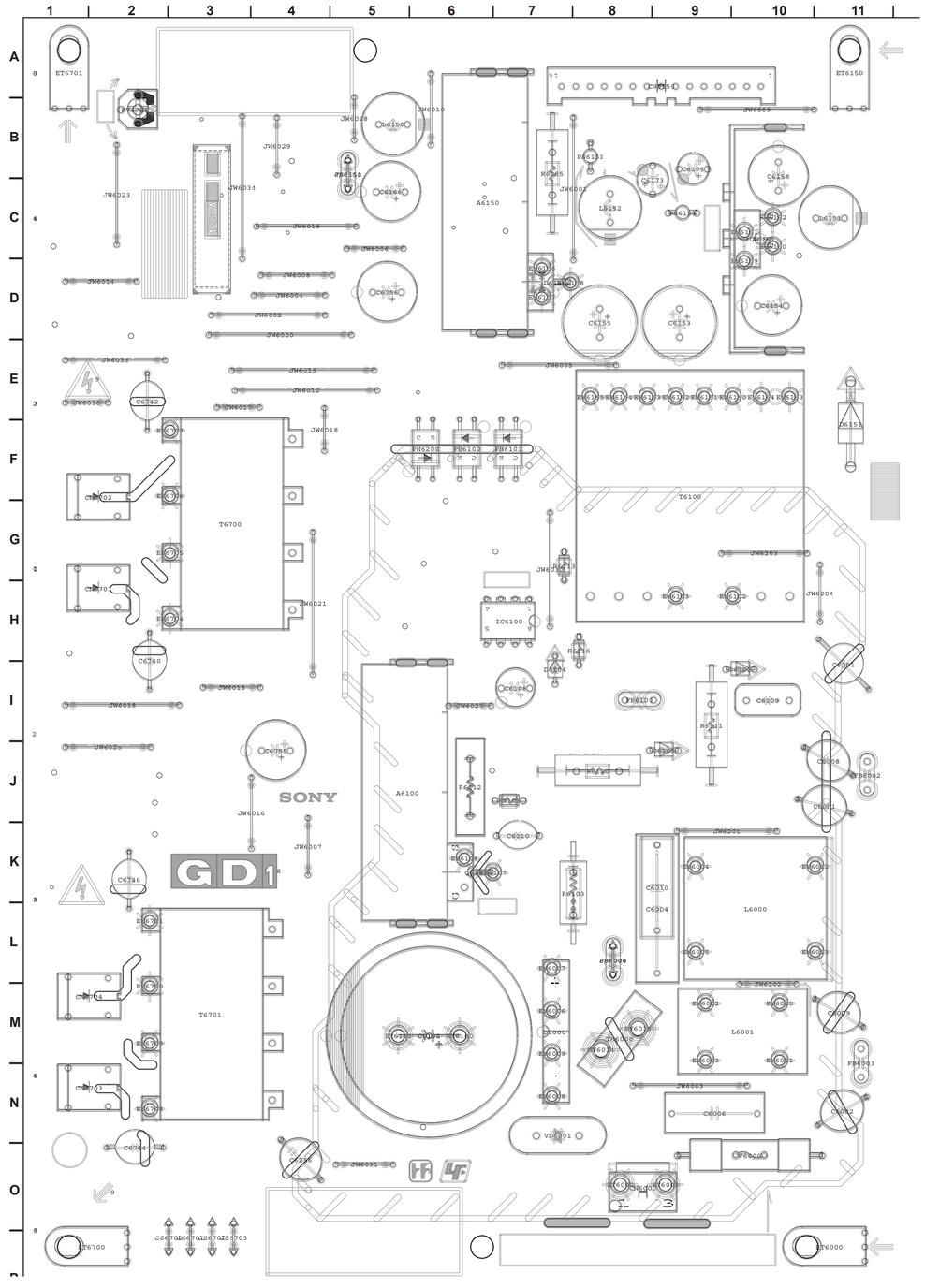
GD1 (POWER) BOARD SCHEMATIC DIAGRAM (1 OF 2) (KDL-22BX300 ONLY)



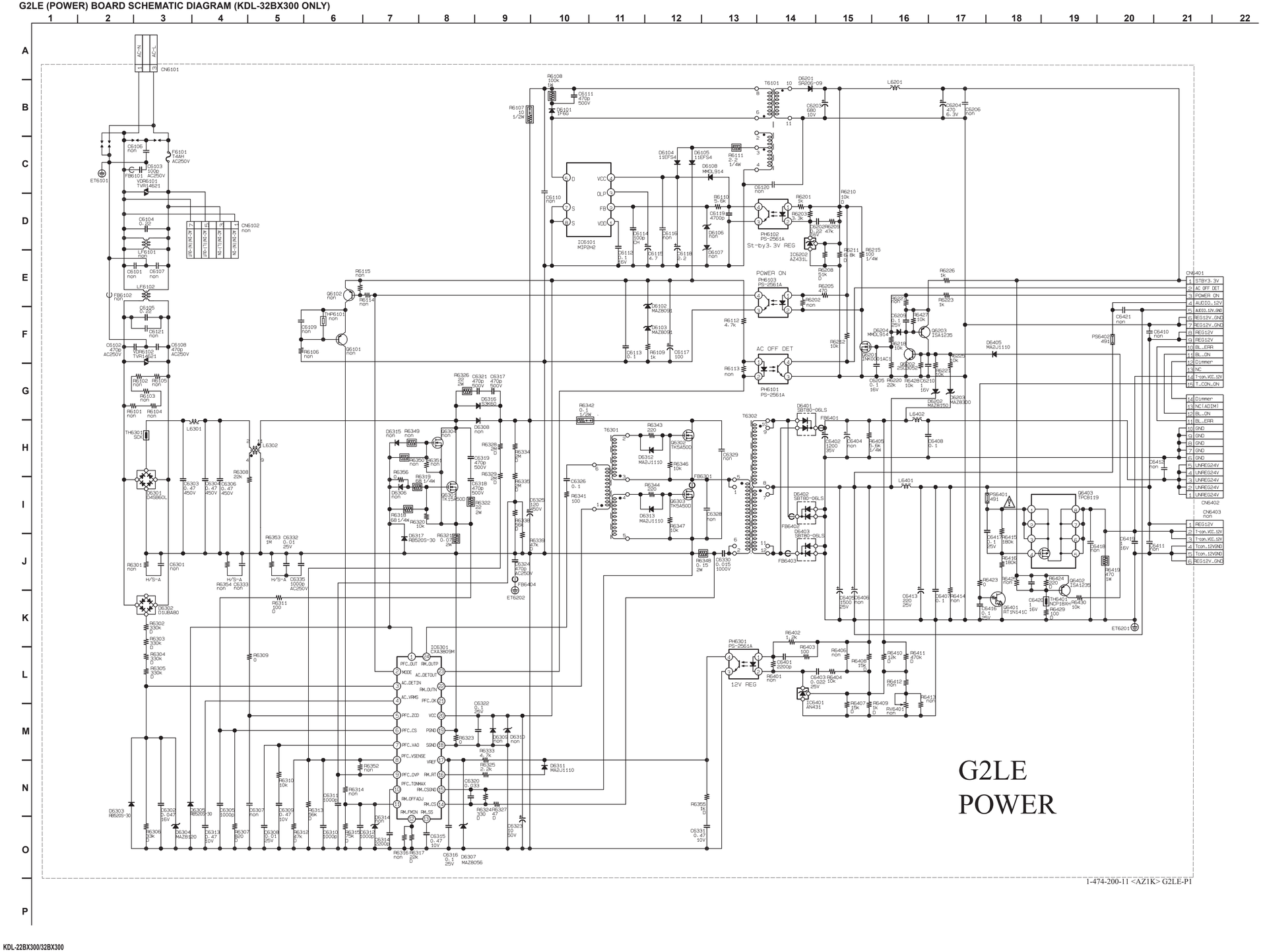
GD1 (POWER) BOARD SCHEMATIC DIAGRAM (2 OF 2) (KDL-22BX300 ONLY)



GD1 [POWER] COMPONENT SIDE (KDL-22BX300 ONLY)



G2LE (POWER) BOARD SCHEMATIC DIAGRAM (KDL-32BX300 ONLY)


G2LE
POWER
CN6101
CN6102
CN6401
CN5402
CN5403
IC6301 CXA3809M
IC6101 MIP2H2
IC5202 AZ431L
IC5401 AN431
PH6102 PS-2561A
PH6103 PS-2561A
PH6101 PS-2561A
PH6301 PS-2561A
St-by3.3V REG
POWER ON
AC OFF DET
12V REG
T6101
T6301
T6302
L6201
L6301
L6302
L6401
L6402
ET6101
ET6201
ET6202
FB6404
Q6203 ISA1235
Q6402 ISA1235
Q6403 TPC8119
Q6401 RT1N141C
D6201 SR306-09
D6401 SB180-06LS
D6402 SB180-06LS
D6403 SB180-06LS
D6203 MAZ8300
D6205 MAZ8150
D6405 MA2J1110
D6312 MA2J1110
D6313 MA2J1110
D6102 MAZ8091
D6103 MAZ8091
D6104 11EF54
D6105 11EF54
D6108 MMDL914
D6204 MMDL914
D6316 MAZ8360
D6311 MA2J1110
D6307 MAZ8056
D6304 MAZ8120
D6303 RB520S-30
D6305 RB520S-30
D6317 RB520S-30
D6101 TF66
D6301 D4SB60L
D6302 D1UBA80
Q6101
Q6102
Q6301 TK15A50D
Q6302 TK5A50D
Q6303 TK5A50D
Q6304 TK5A50D
Q6305 TK5A50D
Q6306 TK5A50D
Q6307 TK5A50D
Q6308 TK5A50D
Q6309 TK5A50D
Q6310 TK5A50D
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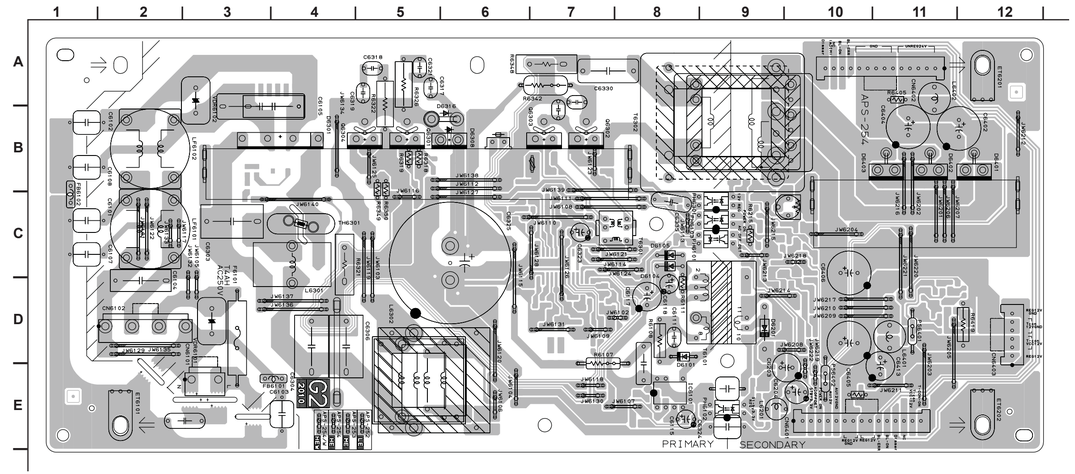
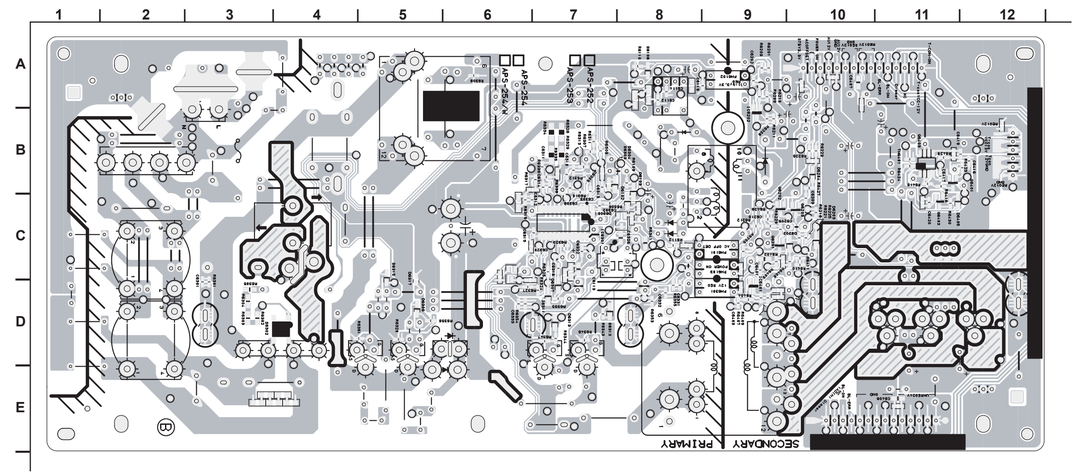
Q6312 TK5A50D
Q6313 TK5A50D
Q6314 TK5A50D
Q6315 TK5A50D
Q6316 TK5A50D
Q6317 TK5A50D
Q6318 TK5A50D
Q6319 TK5A50D
Q6320 TK5A50D
Q6321 TK5A50D

G2LE [POWER]
COMPONENT SIDE (KDL-32BX300 ONLY)



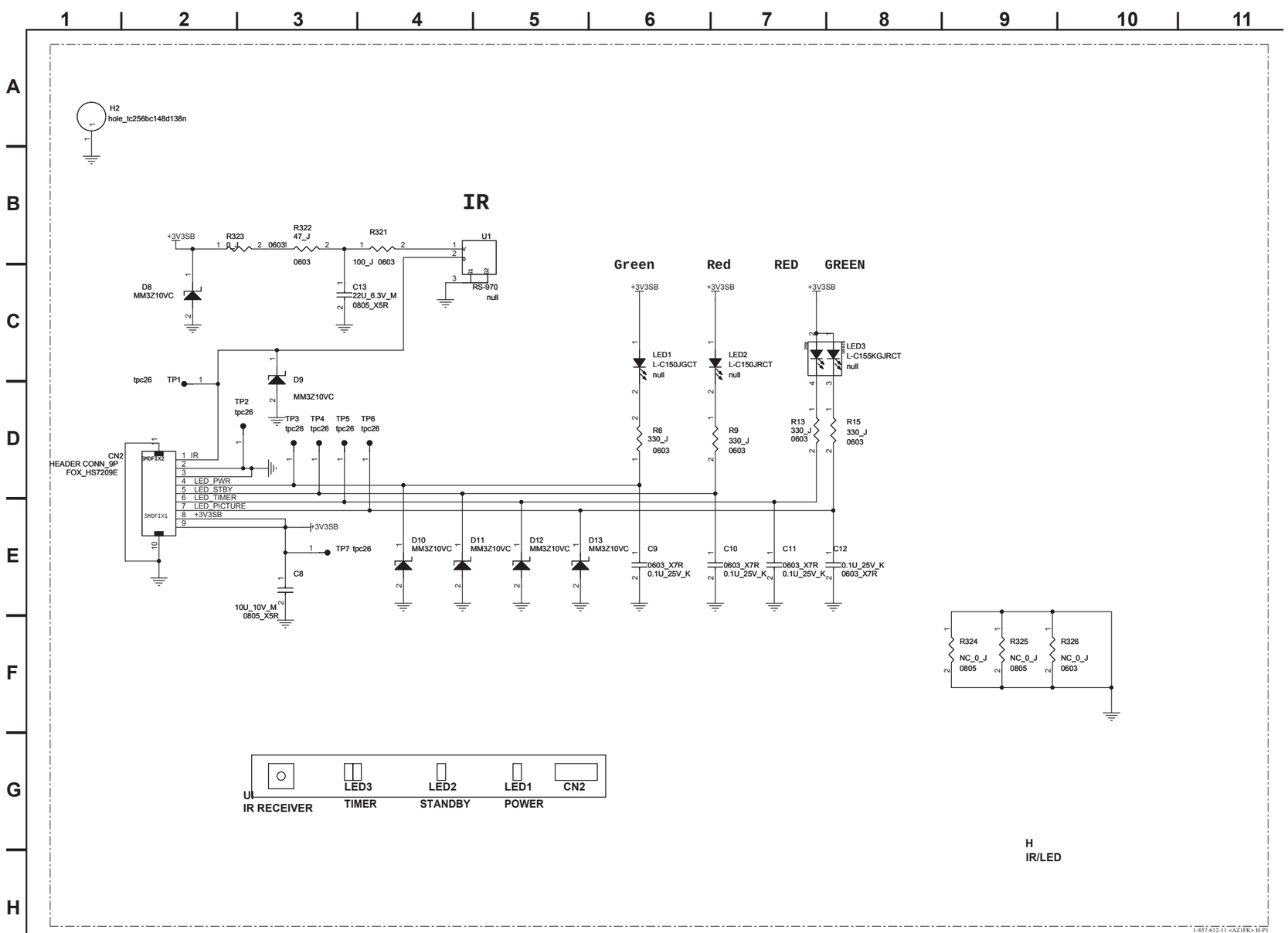
G2LE [POWER]
CONDUCTOR SIDE (KDL-32BX300 ONLY)



H BOARD SCHEMATIC DIAGRAM

H [IR, LED]

THE PWB DIAGRAMS FOR THIS BOARD ARE NOT AVAILABLE.

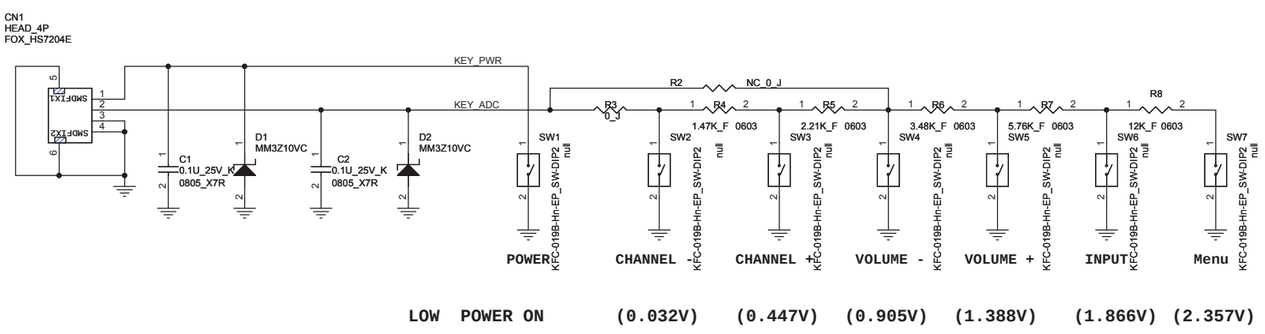


SWITCH UNIT SCHEMATIC DIAGRAM

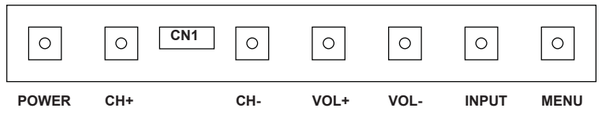
SU [SWITCH UNIT]

THE PWB DIAGRAMS FOR THIS BOARD ARE NOT AVAILABLE.

Keypad



LOW POWER ON (0.032V) (0.447V) (0.905V) (1.388V) (1.866V) (2.357V)



SWITCH UNIT

1-487-962-11 <AZ1PK> SW-P1